

Remarks

Review and reconsideration of this application are respectfully requested in view of the above amendments and the following remarks:

No new matter has been added by this amendment, nor has any matter been added that would cause any additional undue effort on the part of the Office.

Claims 28, 30, 31, 36-42 and 61 remain in this application.

Claims 29, 32-35 and 43-60 have been canceled, since these claims define mixtures which are excluded by claim 28.

New claims 62 and 63 define specific mixtures which fall within the Markush group set forth in claim 28.

For the purpose of advancing this application to allowance, Applicant has amended claim 28 to more clearly identify the Markush group which defines mixtures of two or more members of the particular chlorinated polyolefins of the present invention, and to more particularly specify those mixtures which are excluded from the present claims. Accordingly, it is believed that claim 28 can now be considered allowable.

Claim 30, 31, 36-40 are objected to as being dependent upon a rejected base claim.

In view of the amendment to claim 28, it is believed that claim 28 is now allowable and, therefore, dependent claims 30, 32 and 36-40 are also allowable.

Claims 41 and 42 are dependent claims which simply further limit independent claim 28 and should also be considered allowable.

Applicant notes and appreciates the Examiner's withdrawal of the previous obviousness double patenting rejection of claim 28-42 due to Terminal Disclaimer filed 11/19/04.

Applicant notes and appreciates the Examiner's previous rejection of claims 28-42 under 35 USC 112, 2<sup>nd</sup> paragraph due to the amendment filed 12/29/04.

Applicant notes and appreciates the Examiner's previous rejection of claims 28-30, 32-35 and 42 due to the amendment filed 12/29/04.

Claims 28-30, 32-35, 41-42 and 61 are rejected under 35 USC 103(a) as being unpatentable over Ogoe et al (US 5,457,146) in view of Warren et al (US 5,051,474). Regarding claims 28-30, 32-35 the Examiner alleges that Ogoe et al. teaches a composition comprising a thermoplastic polyurethane (column 3, lines 15-20), chlorinated polyethylene (column 8, lines 30-35) or chlorosulfonated polyethylene (column 9, lines 15-20), and a peroxide crosslinking agent (column 10, lines 40-45) which crosslinks the chlorinated (or chlorosulfonated) polyethylene (network structure) (column 10, lines 20-30) and forms a thermoplastic vulcanizate. The amount of polyurethane is preferably at least 30 parts and not more than 85 parts (column 2, lines 5-10), which overlaps the claimed range of from 30 to 70-weight %. The amount of chlorinated polyethylene is more preferably at least about 30 parts and not more than about 50 parts (column 2, lines 10-20), which overlaps the claimed range of from 70 to 30-weight%. The Examiner alleges that Ogoe teaches that the composition is useful in the production of extruded (column 7, lines 60-65) articles of parts and components for the use in the automotive industry (column 1, lines 45-55) with a desirable balance of impact and heat resistance properties (column 1, lines 35-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have made the thermoplastic vulcanizate capable of withstanding temperatures up to about 300°F, in order to provide the desired heat resistance properties required by an automotive. The thermoplastic vulcanizate is capable of resisting chemical attack by virtue of its composition. The Examiner recognizes that Ogoe fails to teach that the thermoplastic vulcanizate is made into a hose, that the chlorinated polyethylene and chlorosulfonated polyethylene are mixed together, or a mixture of any of the other claimed polyolefins.

Warren is cited as teaching a composition comprising a thermoplastic polyurethane (column 3, lines 5-10) in an amount of about 20 to about 90 percent by weight (column 4, lines 20-25) which overlaps the claimed range of from about 30 to 70 weight percent, and a chlorine-containing polyolefin which can be a mixture of chlorinated polyethylene and chlorosulfonated polyethylene (claim 28), chlorinated polyethylene and chlorinated polypropylene (claim 29), chlorosulfonated polyethylene and chlorinated polypropylene (claim 32), chlorinated polyethylene and chlorinated copolymer of ethylene and propylene (claim 33), chlorinated polypropylene and chlorinated copolymer of ethylene and propylene (claim 34), chlorosulfonated polyethylene and chlorinated copolymer of ethylene and propylene (claim 35) (column 4, lines 45-60).

Warren is also relied upon as teaching the thermoplastic vulcanizates (column 1, lines 55-60) present in the amount of from about 0.2 to about 60 percent by weight (column 5, lines 1-10). The crosslinking agent used is a polyisocyanate (column 6, lines 25-35) which crosslinks the thermoplastic polyurethane in the thermoplastic vulcanizate.

Warrant is further relied upon as teaching that the thermoplastic vulcanizate (elastomers) (column 1, lines 35-40) are used in hoses (column 2, line 6), and are exceptionally water and heat resistant (column 3, lines 1-5). Both Ogoe and Warren are directed to thermoplastic vulcanizates and are hence analogous art. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the chlorine-containing polyolefin in the thermoplastic vulcanizate of Ogoe in order to obtain an extruded hose with the desired high performance required in automobiles, which is capable of withstanding temperatures up to 300°F, for prolonged periods of time, and is exceptional water-resistant at those temperatures, as taught by Warren.

Regarding claim 41, the Examiner alleges that Ogoe teaches that the extruder can be used as a reactor (column 7, lines 64-66), which means that the article of Ogoe is being crosslinked while it is being extruded. Therefore, the thermoplastic polyurethane in the hose of Ogoe, in

view of Warren, is crosslinked in the matrix by dynamic vulcanization during the manufacture of the hose.

Regarding claim 42, the Examiner alleges that Ogoe teaches a peroxide crosslinking agent (column 10, lines 40-45), but not the markush group component of an isocyanate having a functionality of more than 2.0. Warren is cited as teaching that the crosslinking used for the thermoplastic vulcanizate is a polyisocyanate (column 6, lines 25-35) which crosslinks the thermoplastic polyurethane. Polyisocyanate is an isocyanate having a functionality of more than 2.0. The Examiner reasons that because both Ogoe and Warren are solving a common problem of crosslinking a thermoplastic vulcanizate, then Ogoe and Warren are analogous art. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used the polyisocyanate crosslinking agent of Warren in place of the peroxide crosslinking agent of Ogoe for crosslinking the thermoplastic polyurethane in the matrix, in order to obtain the desired physical properties caused by the crosslinking of the polyurethane.

Regarding claim 61, the Examiner alleges that Ogoe teaches that the extruded article is for use in an automotive (column 1, lines 43-55) and has a desirable balance of impact and heat resistance properties (column 1, lines 35-40). While Ogoe in view of Warren fails to teach that the extruded hose is an automotive power steering hose, Ogoe teaches that the extruded article is used in an automotive and has the desired balance of impact and heat resistance properties. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have made the extruded hose of Ogoe in view of Warren, into an automotive power steering hose with the desired high performance required by an automotive.

Applicant contends that Ogoe et al. neither teaches nor suggests an extruded high performance, chemical resistant hose capable of resisting temperatures up to about 300°F, for a prolonged period of time. Ogoe et al. teaches a composition containing a thermoplastic polyurethane and a chlorinated polyethylene component. In an alternate embodiment, a chlorosulfonated polyethylene may be substituted for the chlorinated polyethylene. The composition of Ogoe et al. is designed to be used in the production of films, fibers, extruded sheets, multilayer laminates, molded and shaped articles such as data storage apparatus, appliance and the like. There is no teaching that the composition can be extruded to form specialized high performance, chemical resistant hoses, such as power steering hoses, which are capable of withstanding temperatures up to about 300°F for prolonged periods of time.

Applicant contends that Warren does not teach thermoplastic vulcanizates containing thermoplastic polyurethane and the chlorine-containing compounds of the present invention, or for that matter Ogoe would be effective in the extrusion of a high performance, chemical resistant hose, such as power steering hoses, capable of withstanding temperatures of about 300°F, for prolonged periods of time. The Examiner has pointed to col. 2, line 6 of Warren, where the Examiner states that Warren teaches that thermoplastic vulcanizates are used in hoses. What Warren discloses in the background of his invention is that a new class of melt processible thermoplastic elastomers based on compatible blends of an ethylene copolymer and a vinyl or vinylidene halide which are particularly effective in applications involving seals, weather-strips, hoses, wires and cables. Therefore the Examiner alleges that it would have been obvious to one of ordinary skill in the art to have made a hose article with the desired balance of impact and heat resistance properties as taught by Ogoe et al., inherently capable of withstanding temperatures up to about 300°F.

Furthermore, the Examiner alleges that the thermoplastic vulcanizate of Ogoe et al. is inherently capable of resisting chemical attack by virtue of its composition, and that it is also capable of withstanding temperatures up to about 300°F.

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Applicant can find no support for such allegation. Even if the vulcanizate of Ogoe et al was able to resist chemical attack and be able to withstand temperatures of up to about 300° F, the composition is distinctly different from the present composition.

In view of the foregoing amendments and remarks, it is believed that the present application is now in condition for allowance, and an early indication thereof is earnestly solicited.

Respectfully submitted,

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